

Claims:

1. An aqueous resin composition comprising, an aqueous dispersion of a polyurethane resin, said aqueous dispersion obtained by reacting at least one macromolecular polyol, at least one organic polyisocyanate, a chain extending agent and 2,2-dimethylolbutanoic acid, and optionally an aqueous dispersion of an acrylic resin,

5 wherein said polyurethane resin has an inherent viscosity ( $\eta_{inh}$ ) measured at a concentration of 0.5g/dL in dimethylformamide solution from 0.2 to 0.7 dL/g when the resin comprising said aqueous resin composition consists essentially of a polyurethane resin and wherein a film obtained by heat treatment at 80°C for 8 hours after drying said aqueous resin has an elastic modulus at 25 °C of  $8.0 \times 10^6$  to  $5.0 \times 10^8$  Pa, and the elastic modulus at 80°C of said film is  $8.0 \times 10^7$  Pa or less.

10 2. The aqueous resin composition as defined in Claim 1, wherein said acrylic resin comprises a carboxyl group.

15 3. The aqueous resin composition as defined in Claim 2, further comprising a water-soluble or a water-dispersible curing agent having two or more functional groups capable of reacting with one or more carboxyl groups.

4. The aqueous resin composition as defined in Claim 3, wherein the functional groups are epoxy groups.

20 5. The aqueous resin composition as defined in Claim 1, wherein a weight ratio of the polyurethane resin to the acrylic resin is from 20:80 to 100:0.

6. The aqueous resin composition as defined in Claim 1, wherein the macromolecular polyol is at least one polyol having a molecular weight of 500 to 3000 selected from the group consisting of polyether diols, polyester diols, polycarbonate diols and polyester carbonate diols.

7. The aqueous resin composition as defined in Claim 1, wherein a carboxyl group content of the resin comprising the aqueous resin composition is from 20 to 60 mmol per 100g of resin.

8. The aqueous resin composition as defined in Claim 1, wherein the polyurethane resin comprises a compound having a plasticizing effect on the polyurethane resin.

9. The aqueous resin composition as defined in Claim 8, wherein the compound having a plasticizing effect on the polyurethane resin is ethylenedibromide-4,4'-isopropylidene bis(2,6-dibromophenol) condensate.

10. The aqueous resin composition as claimed in Claim 8, wherein the compound having a plasticizing effect on the polyurethane resin is present in an amount of from 0 to 50 parts by weight based on 100 parts of the polyurethane resin.

11. The aqueous resin composition as defined in Claim 3, wherein a weight ratio of the resin to the curing agent is from 10:1 to 100:20 in terms of effective components.

12. The aqueous resin composition as defined in Claim 1, wherein an average dispersion particle diameter of the aqueous dispersion of a polyurethane resin is 500 nm or less, and the average dispersion particle diameter of an aqueous dispersion of an acrylic resin is 1  $\mu$ m or less and is at least 1.2 times that of the aqueous dispersion of a polyurethane resin.

13. The aqueous resin composition as claimed in Claim 1, wherein the at least one macromolecular polyol is selected from the group consisting of polyethylene glycol, polypropylene glycol, polytetramethylene glycol, poly (methyltetramethylene glycol), polybutylene adipate diol, polybutylene sebacate diol, poly hexamethylene adipate diol, poly (3-methyl-1,5-pentylene adipate) diol, poly(3-methyl-1,5-pentylene sebacate) diol, polycaprolactone diol, poly( $\beta$ -methyl- $\delta$ -valerolactone) diol, polyhexamethylene carbonate diol and poly(3-methyl-1,5-pentylene carbonate) diol.

25 14. The aqueous resin composition as claimed in Claim 1, wherein the organic

polyisocyanate is selected from the group consisting of alicyclic diisocyanates, aliphatic diisocyanates and aromatic diisocyanates having a molecular weight not exceeding 500.

15. The aqueous resin composition claimed in Claim 1, wherein the chain extending agent has a molecular weight of less than 300 and comprises at least two active hydrogen atoms.

16. The aqueous resin composition claimed in Claim 1, wherein a molar ratio of the macromolecular polyol and the chain extending agent is from 1:0.5 to 1:20.

17. The aqueous resin composition claimed in Claim 1, wherein a molar ratio of the macromolecular polyol and the organic polyisocyanate is from 1:2 to 1:9.

18. The aqueous resin composition claimed in Claim 1, wherein a molar ratio of the organic polyisocyanate to the chain extending agent is from 1:0 to 1:0.9.

19. The aqueous resin composition as claimed in Claim 1, wherein the aqueous dispersion is obtained by reacting at least one macromolecular polyol, at least one organic polyisocyanate, a chain extending agent, 2,2-dimethylolbutanoic acid and a tertiary amine.

15 20. The aqueous resin composition as claimed in Claim 19, wherein the tertiary amine is reacted in an amount of from 0.3 to 1.5 times a number of carboxyl groups in the polyurethane resin.

20 21. A method of manufacturing a separable fastener, comprising coating the aqueous resin composition as defined in Claim 1 on a back surface of a separable fastener, wherein said separable fastener comprises a plurality of synthetic fibers and drying and/or heat treating said separable fastener.

22. The method of manufacturing the separable fastener as defined in Claim 21, wherein the drying and/or heat treatment are performed for a time and at a temperature

satisfying the following relation (1):

$$t \times 0.5^{-T/10} \geq 1000, 40 \leq T \leq 200 \quad (1)$$

where T is said drying and heat treatment temperature ( $^{\circ}\text{C}$ ), and t is said drying and heat treatment time (hr).

5        23. A separable fastener obtained by the manufacturing method as defined in Claim  
21.

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